Amendments to the Claims

Please cancel Claims 8, 21, 27, 28, 30-32, and 35-36. Please amend Claims 1, 9, 14, 22, 33, 34, 37, and 38. Please add new Claim 39. The Claim Listing below will replace all prior versions of the claims in the application:

Claim Listing

1. (Currently amended) In a communication system, apparatus for changing the bandwidth of a circuit switched connection without taking down the connection comprising:

a network management system arranged to issue a connection create request effective during a first time period and a connection modify command effective during a second time period;

a first switching circuit comprising a first interface and a second interface, ~~said first switching circuit included in a SONET communication network having at least three switching circuits,~~ the first switching circuit being arranged to

receive data at the first interface,

be responsive to the connection create request during the first time period to reserve first resources at a first bandwidth for transmitting the data between the first and second interfaces at the first bandwidth and to launch a first path setup message using a signaling protocol, ~~and~~

be responsive to the modify command during the second time period to reserve virtually concatenated second resources at a second bandwidth greater than the first bandwidth for transmitting the data between the first and second interfaces at the second bandwidth and to launch a second path setup message using the signaling ~~protocol~~ protocol,

be responsive to a first path acknowledge message during the first time period to complete a first connection between first and second interfaces using the first resources, and

be responsive to a second path acknowledge message during the second time period to complete a second connection between first and second interfaces using

the second resources, the first and the second connections being combined as a virtually concatenated connection;

a second switching circuit comprising a third interface and a fourth interface, the second switching circuit being arranged to

receive the data at the third interface,

be responsive to the first path setup message during the first time period to reserve third resources at the first bandwidth for transmitting the data between the third and fourth interfaces at the first bandwidth and to launch the first path acknowledge message using the signaling protocol, and

be responsive to the second path setup message during the second time period to reserve virtually concatenated fourth resources at the second bandwidth for transmitting the data between the first and second interfaces at the second bandwidth and to launch the second path acknowledge message using the signaling protocol; and

at least one network coupling the network management system, first switching circuit and second switching circuit[[,]]

~~wherein said connection modify command is formed by said network management system without determining usage statistics for all of said switching circuits in said SONET communication network~~.

2. (Original) A system, as claimed in claim 1, wherein the first and second switching circuits each comprise an add/drop multiplexer.

3. (Original) A system, as claimed in claim 1, wherein the first switching circuit comprises an add/drop multiplexer and wherein the second switching circuit comprises a digital cross-connect switch.

4. (Original) A system, as claimed in claim 1, wherein said at least one network comprises one or more of a SONET network, an SDH network and a WDM network.

5. (Original) A system, as claimed in claim 1, wherein the signal protocol is carried in one or more of a SONET DCC, SONET/SDH overhead bytes, an optical supervisory channel, and an out-of-band network.

6. (Original) A system, as claimed in claim 1, wherein the signal protocol comprises a fast signaling protocol.

7. (Original) A system, as claimed in claim 1, wherein the signal protocol comprises at least one of SS7, PNNI, RSVP-TE, and CR-LDP.

8. (Canceled)

9. (Currently amended) A system, as claimed in ~~claim 8~~ claim 1, wherein the first switching circuit transmits a first connection update complete signal to the network management system in response to the completion of the first connection using the first resources and transmits a second connection complete signal to the network management system in response to the completion of the second connection using the second resources.

10. (Original) A system, as claimed in claim 1, wherein the first resources comprise a predetermined VT data structure and the second resources comprise a multiple of the predetermined VT data structure.

11. (Original) A system, as claimed in claim 1, wherein the first resources comprise a predetermined STS data structure and the second resources comprise a multiple of the predetermined STS data structure.

12. (Original) A system, as claimed in claim 1, wherein the first and second switching circuits comprise buffers and wherein the first and second switching circuits reserve at least some of the buffers so that differential delays in the processing of the data are accommodated.

13. (Original) A system, as claimed in claim 1, wherein the first switching circuit transmits control information indicating a group ID and a group position for the data transmitted using the second resources.

14. (Currently amended) In a data communication system comprising a first switching circuit and also comprising a second switching circuit, a method for changing the bandwidth of a circuit switched connection between the first and second switching circuits without taking down the connection comprising:

issuing a connection create request effective during a first time period and a connection modify command effective during a second time period;

responding to the connection create request during the first time period to reserve first resources at a first bandwidth for transmitting the data across the first switching circuit at the first bandwidth and to launch a first path setup message using a signaling protocol;

responding to the connection modify command during the second time period to reserve virtually concatenated second resources at a second bandwidth greater than the first bandwidth for transmitting the data across the first switching circuit at the second bandwidth and to launch a second path setup message using the signaling protocol;

responding to the first path setup message during the first time period to reserve third resources at the first bandwidth for transmitting the data across the second switching circuit at the first bandwidth and to launch a first path acknowledge message using the signaling protocol;

responding to the second path setup message during the second time period to reserve virtually concatenated fourth resources at the second bandwidth for transmitting the data across the second switching circuit at the second bandwidth and to launch a second path acknowledge message using the signaling protocol;

responding to the first acknowledge message during the first time period to complete a first connection across the first switching circuit using the first resources;

responding to the second acknowledge message during the second time period to complete a second connection across the first switching circuit using the second resources; and

coupling the first and second switching circuits[[,]]

~~wherein said first switching circuit and said second switching circuit are included in a SONET communication network having at least three switching circuits, and~~

~~wherein said connection modify command is formed by said network management system in communication with said SONET communication network without determining usage statistics for all of said switching circuits in said SONET communication network~~.

15. (Original) A method, as claimed in claim 14, wherein the first and second switching circuits each comprise an add/drop multiplexer.

16. (Original) A method, as claimed in claim 14, wherein the first switching circuit comprises an add/drop multiplexer and wherein the second switching circuit comprises a digital cross-connect switch.

17. (Original) A method, as claimed in claim 14, wherein the system comprises one or more of a SONET network, an SDH network and a WDM network and wherein the coupling comprises coupling the first and second switching circuits with one or more of the SONET network, the SDH network and the WDM network.

18. (Original) A method, as claimed in claim 17, wherein the signal protocol is carried in one or more of a SONET DCC, SONET/SDH overhead bytes, an optical supervisory channel, and an out-of-band network.

19. (Original) A method, as claimed in claim 14, wherein the signal protocol comprises a fast signaling protocol.

20. (Original) A method, as claimed in claim 14, wherein the signal protocol comprises at least one of SS7, PNNI, RSVP-TE, and CR-LDP.

21. (Canceled)

22. (Currently amended) A method, as claimed in ~~claim 21~~ claim 14, and further comprising transmitting a first connection complete signal in response to the completion of the first connection using the first resources and transmitting a second connection complete signal in response to the completion of the second connection using the second resources.

23. (Original) A method, as claimed in claim 14, wherein the first resources comprise a predetermined VT data structure and the second resources comprise a multiple of the predetermined VT data structure.

24. (Original) A method, as claimed in claim 14, wherein the first resources comprise a predetermined STS data structure and the second resources comprise a multiple of the predetermined STS data structure.

25. (Original) A method, as claimed in claim 14, and further comprising buffering at least some of the data so that differential delays in the processing of the data are accommodated.

26. (Original) A method, as claimed in claim 14, and further comprising transmitting control information indicating a group ID and a group position for the data transmitted using the second resources.

27-32. (Canceled)

33. (Currently amended) The system of ~~claim 32~~ claim 37 wherein the connection create command establishes a virtual tributary connection.

34. (Currently amended) The system of ~~claim 32~~ claim 37 wherein digital cross-connect launches the path setup message to the second add-drop multiplexer.

35-36. (Canceled)

37. (Currently amended) ~~The system of claim 36~~ A communication system including:

a network management system;

a digital cross-connect in communication with the network management system; and

a synchronous optical network including a first add/drop multiplexer and a second add/drop multiplexer, the synchronous optical network in communication with the digital cross-connect,

wherein the network management system uses the digital cross-connect to initiate a connection create command at the first add/drop multiplexer,

wherein the first add/drop multiplexer reserves resources for the connection in response to the connection create command,

wherein the digital cross-connect then transmits a path setup message to the second add/drop multiplexer using the synchronous optical network to establish a path between the first add/drop multiplexer and the second add/drop multiplexer,

wherein the second add/drop multiplexer sends a path acknowledge to the digital cross-connect once the second add/drop multiplexer has reserved resources for the connection specified by the path setup message,

wherein the path acknowledge is received by the digital cross-connect and the digital cross-connect then reserves resources for the connection specified by the path setup message, and

wherein the digital cross-connect then ~~forward~~ forwards the path acknowledge message to the first add/drop multiplexer and the first add/drop multiplexer then completes the connection.

38. (Currently amended) The system of claim 37 wherein the first add/drop multiplexer ~~send~~ sends a connection complete response to the digital cross-connect once the connection has been completed.

39. (New) In a data communications system, a method for changing the bandwidth of an existing circuit switched connection between a first switching circuit and a second switching circuit without taking down the existing connection, the method comprising:

launching a connection modify command from a network management system via a digital cross-connect to the first switching circuit;

reserving first additional resources for the existing connection at the first switching circuit and launching a path setup message from the first switching circuit to the digital cross-connect in response to receiving the connection modify command at the first switching circuit;

reserving second additional resources for the existing connection at the digital cross-connect and forwarding the path setup message to the second switching circuit in response to receiving the path setup message at the digital cross-connect;

reserving third additional resources for the existing connection at the second switching circuit, virtually combining the third additional resources with the existing connection at the second switching circuit, and launching a path acknowledge message to the digital cross-connect in response to receiving the path setup message at the second switching circuit;

virtually combining the second additional resources with the existing connection at the digital cross-connect and forwarding the path acknowledge message to the first switching circuit in response to receiving the path acknowledge message at the digital cross-connect; and

virtually combining the first additional resources with the existing connection at the first switching circuit in response to receiving the path acknowledge message at the first switching circuit.